WE CLAIM:

1. An ultrasound system comprising:

a scan head having a plurality of ultrasound transducer elements for producing ultrasound beams;

a first subset of the plurality of ultrasound transducer elements for producing a first ultrasound beam;

a second subset of the plurality of ultrasound transducer elements, that is displaced by more than one transducer element from the first subset, and for producing a second ultrasound beam;

a third subset of the plurality of ultrasound transducer elements, that is displaced by more than one transducer element from the second subset, and for producing a third ultrasound beam; and

a transmit switch for coupling the plurality of ultrasound transducer elements to a beam transmitter;

wherein, the second subset is the only subset of the plurality of ultrasound transducer elements operative between a time the first subset is operative and a time the third subset is operative.

2. The system of claim 1, wherein the second subset differs in position from the both the first subset and the third subset by at least fifty percent of the number of transducer elements in the second subset.

3. The system of claim 1, wherein the second subset is disjoint with respect to both the first subset and the third subset.

4. The system of claim 1, wherein the center of the first subset is displaced from the center of the second subset by a distance greater than or equal to the width of two ultrasound transducer elements in the plurality of ultrasound transducer elements, and the center of the second subset is displaced from the center of the third subset by a distance greater than or equal to the width of two ultrasound transducer elements in the plurality of ultrasound transducer elements.

5. The system of claim 1, wherein the second subset overlaps the first and third subsets by amounts less than thirteen percent of the width of the second subset.

6. The system of claim 1, wherein the second subset overlaps the first and third subsets by amounts less than thirty-four percent of the width of the second subset.

7. The system of claim 1, wherein the second subset overlaps the first and third subsets by amounts less than eighty-seven percent of the width of the second subset.

8. The system of claim 1, wherein the transmit switch includes outputs coupled to the plurality of ultrasound transducer elements and inputs coupled to the beam transmitter, the number of inputs being fewer than the number of outputs.

9. The system of claim 1, wherein the transmit switch includes outputs coupled to the plurality of ultrasound transducer elements and inputs coupled to the beam transmitter, the number of inputs being fewer than the number of outputs and each of the outputs being alternatively coupled to less than eight of the inputs.

10. The system of claim 1, further including an image scan converter for generating first data using the first subset and generating second data using the second subset, the first data and the second data being used to form an image.

11. The system of claim 1, further including an image scan converter for generating first data using the first subset and generating second data using the second subset, the first and second data being used to form an image with a resolution independent of the number of ultrasound transducer elements common to the first subset and the second subset.

12. The system of claim 1, wherein the ultrasound transducer elements included in the second subset are disposed in a linear array.

13. The system of claim 1, wherein the ultrasound transducer elements included in the second subset are disposed in a curvilinear array.

14. The system of claim 1, further comprising computer code for calculating a cross-correlation between first data generated using the first subset and second data generated using the second subset.

15. The system of claim 1, further comprising computer code for calculating a cross-correlation between less than fifty percent of first data generated using the first subset and less then fifty percent of second data generated using the second subset.

16. The system of claim 1, further comprising computer code for calculating a cross-correlation between less then thirty-four percent of first data generated using the first subset and less then thirty-four percent of second data generated using the second subset.

17. An ultrasound imaging method comprising the steps of:

directing three consecutive ultrasound beams into a material under investigation, the three ultrasound beams including,

a first ultrasound beam,

a second ultrasound beam overlapping with the first ultrasound beam by less than eighty-seven percent of the width of the second ultrasound beam, and

a third ultrasound beam overlapping with the second ultrasound beam by less than eighty-seven percent of the width of the second ultrasound beam;

detecting echoes generated by each of the three consecutive ultrasound beams; and

generating two-dimensional echo location data using the detected echoes.

18. The method of claim 17, wherein the two-dimensional echo location data is generated using area-forming.

19. The method of claim 17, further including a step of generating an image using the two-dimensional echo location data.

20. The method of claim 19, wherein the image resolution is independent of overlaps between the first, second, and third ultrasound beams.